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FROZEN WATER SERVICES IN THE BOROUGH OF QUEENS[1]

By John T. Metcalf

The question of frozen services and the method of thawing them to restore the supply is of universal interest after the experience of the winter of 1917–1918. In the Borough of Queens, the department of water supply was wholly unprepared to meet the conditions resulting from the extreme cold, and the experience may be interesting to others from that point of view.

In previous winters, a large number of services had frozen, but these can divided into two classes, those which froze every year and, after a month or so, thawed out of their own accord; and those which, by reason of corrosion or other cause which retarded the flow, froze for the first time. Only those in the second class were reported to the department, and investigation usually showed justification for advising the owner that the service was defective and that he should enlist the services of a plumber. If such justification was not shown at the outset, it was possible to show that the main in the street was not affected and, as the trouble was in the service, which belonged to the owner, he was advised to engage a plumber, which disposed of the case. The department was, therefore, relieved of the necessity of maintaining a force or equipment for this work, and it was only in connection with leaks resulting from broken services that it suffered any inconvenience from frozen conditions.

Based on the number of services reported frozen and so recorded, together with the general flood of complaints received in the latter part of January, 1918, which are not recorded, it is estimated that about 500 frozen services were reported during the winter. This figure does not properly represent the total number of services frozen, because a great many cases which were not reported were brought to light through the investigation of those reported.

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[1] Presented at the annual convention in St. Louis, May 16, 1918

There were two cases of especial interest. One, reported on April 1, had the service interrupted during Christmas week, and the other, reported April 15, had received no service since December 15, 1917. These cases, when investigated, developed that five and six families, respectively, were affected; that the service froze every winter, and that they were waiting for the service to resume, as it had in previous years. The lines were completely corroded and new lines either have been or are being provided to restore the service.

Following the procedure of previous years, no action was taken by the department, beyond advising the owners to engage the services of a plumber or recommending that the electric company be employed to thaw out the lines. This last suggestion was adopted by a great many owners and, in about a dozen instances, the services promptly froze again, leaving the people without water and with no return for the money expended, as the electric company promptly refused to do the work twice for one fee. This resulted in strenuous complaints, which added to the general chaos of the situation.

About the end of January, the commissioner instructed the engineering bureau to render to the property owners all possible assistance, and the matter was immediately taken up. It was learned that the electric light company was charging $27 per service to thaw out frozen connections, on the basis of a minimum charge of $20 for the use of the equipment and an additional charge for time and current utilized to complete the work. The plan required the owner to advance $27, with the understanding that a rebate would be made if the effort expended did not warrant the full charge. From the information obtained by the author it seems that the full charge was always found to be justified.

The company used three or four gangs on this work, each consisting of a foreman and three linemen. A 1½-ton truck was used to transport the equipment, made up of a transformer, a barrel of water, two electrodes used as a rheostat, and about 1,000 feet of heavy copper wire. The current was obtained from the high tension cables, stepped down through the transformer to a voltage of about 40 and, with about 200 amperes flowing through the connection, the work of thawing was accomplished.

Being satisfied that the price charged was not justified, an attempt was made to hire one outfit and gang from the company on a daily fixed charge for the force and equipment, plus eight cents per kilowatt-hour for the current used. The company, realizing that this would interfere with its opportunity to secure large profits and maintaining that it had a right to take advantage of the existing conditions, insisted upon a fee of $200 per day for this rental. Realizing that nothing was to be gained from this source, the plan was abandoned.

The services of the electric company were utilized to thaw out about 400 feet of 4 inch main, at an expense of $250, and a 2-inch main about 1000 feet long for $225. Also, a 4-inch main about 150 feet long was thawed out by the department force by excavating at intervals of 50 feet, and thawing between the openings with a steam hose projected into the pipe. This work cost about $75.

During the investigation, a workman with unusual ingenuity was found employed in thawing services. His outfit consisted of an 8-quart cooking pan made to act as a furnace by providing a draught opening at the bottom, in which he burned charcoal. A 1-gallon spout oilcan was used as a boiler and, connected to the spout, with a 3-inch piece of rubber tubing, was a 50-foot length of metallic hose, similar to that used for connecting portable gas ranges. Steam was generated in the oil can boiler and the hose was gradually fed into the service as the ice was thawed. When interviewed, he said he was charging at the rate of $15 per service and was usually successful in thawing a service in half an hour.

The department decided to secure an outfit modeled after this and purchased a 2-gallon boiler, with furnace, and fitted it up with 100 feet of asbestos-packed metallic tubing. With this outfit, an attempt was made to thaw a number of services, but some difficulties were encountered. The lead service offered great resistance to the passage of the metallic hose and it was found practically impossible to insert the hose to a greater length than 25 feet. Even with a lubricant of oil and graphite, it was only possible to insert the hose to a length of 40 feet, and in one instance, when water was injected into the service at this length, the metallic hose was broken in attempting to recover it and about 25 feet was recovered in ribbons. Upon further investigation of the original outfit, it was found that the originator was careful in selecting the services to be thawed, in that no attempt was made to thaw any service which was connected on the opposite side of the street, and only services were selected where the indications led to the assurance that the line was straight from the cellar wall to the connection in the street.

It is evident that this outfit will not serve unless some method can be devised to relieve greatly the friction between the metallic hose and the lead service, and experiments are being made in an attempt to develop this idea. Up to the present time, the only sure method developed by the department for thawing services is with the electric current, and by this method the work can be performed at a cost of $10 to $15 per service.